

REMARKS/ARGUMENTS

In the Office Action mailed March 18, 2009, claims 1-15 were rejected. In response, Applicant hereby requests reconsideration of the application in view of the amendments and the below-provided remarks. No claims are canceled.

For reference, claims 1-15 are amended. In particular, claim 1 is amended to clarify the language of the claim and to recite the resistance between the test pads is dependent on a distance along the interconnects between the test pads, and the resistance is indicative of the misalignment of the first and second masks. Claims 6 and 13 are each amended to clarify the language of the claims and to recite language similar to at least some of the limitations of claim 1. These amendments are supported, for example, by the subject matter described in the specification at page 2, lines 25-32, and illustrated in Figs. 2-4. Also, claims 2 and 12 are amended to clarify that the directly proportional variable resistor exhibits an increased resistance based on a greater distance between the test pads. These amendments are supported, for example, by the subject matter described in the specification at page 2, lines 25-32. Also, claims 3 and 11 are amended to clarify that the indirectly proportional variable resistor exhibits a decreased resistance based on a greater distance between the test pads. These amendments are supported, for example, by the subject matter described in the specification at page 4, lines 1-8. Also, claims 4, 7, and 9 are amended to recite the stick type interconnect has a substantially rectangular geometry. These amendments are supported, for example, by the subject matter illustrated in Figs. 2-4. Also, claims 5, 8, and 10 are amended to recite additional clarifying details for the hook type interconnect. These amendments are supported, for example, by the subject matter described in the specification at page 3, line 26, through page 4, line 8, and the subject matter illustrated in Figs. 9-12. Also, claim 14 is amended to clarify the optimum resistance corresponds to a configuration in which the reference mask and the second mask are aligned. This amendment is supported, for example, by the subject matter described in the specification at page 4, lines 9-17. Also, claim 15 is amended to clarify the language of the claim.

Additionally, claims 16-19 are added. In particular, claim 16 is added to recite an electrical contact to electrically couple between the two interconnects of claim 1. Claim

17 is added to recite the electrical contact is formed on the same mask as at least one of the interconnects. Claim 18 is added to recite the variable resistor is formed by at most two layers including the first and second masks. Claim 19 is added to recite the two test pads are both formed by the first mask. The language of these claims is supported, for example, by the subject matter described in the specification at page 2, lines 17-32, of the present application.

Claim Rejections under 35 U.S.C. 102 and 103

Claims 1-5 and 13-15 were rejected under 35 U.S.C. 102(b) as being anticipated by Look et al. (U.S. Pat. No. 6,393,714, hereinafter Look). Additionally, claims 6-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Look in view of McMurtry (U.S. Pat. No. 4,153,998, hereinafter McMurtry). However, Applicant respectfully submits that these claims are patentable over Look and McMurtry for the reasons provided below.

Independent Claim 1

Claim 1 is patentable over the combination of Look because Look does not disclose all of the limitations of the claim. Claim 1 recites:

A structure comprising:
at least one proportional variable resistor suitable for electrically measuring unidirectional misalignment of stitched masks in etched interconnect layers, said variable resistor comprising:
at least a first mask and a second mask that when superimposed comprise at least two test pads and two interconnects, wherein a resistance between the test pads is dependent on a distance along the interconnects between the test pads, and the resistance is indicative of the misalignment of the first and second masks.

(Emphasis added.)

In contrast, Look does not disclose all of the limitations of the claim. In particular, Look does not disclose two interconnects and a resistance between the test pads is dependent on a distance along the interconnects between the test pads. Look merely discloses a mask-alignment structure 100 which has a single resistive element

115. Look, Figs. 1 and 2. The resistive element 115 electrically connects the first and second conductive elements 105 and 110 of the structure 100. Look, col. 4, lines 4-6. More specifically, the resistive element 115 partially overlaps the conductive element 105 to define an overlap area, or “contact area,” which is proportional to the extent to which a contact window is aligned with the conductive element 105. Look, col. 4, lines 17-23. Thus, the resistance of the resistive element 115 varies with the contact area, and the resistance can be used to measure misalignment of the metal layers used to form the conductive elements 105 and 110. Look, col. 4, lines 24-27.

Hence, Look merely describes a single resistive element which has a resistance dependent on a contact area between the resistive element and the conductive layer. Therefore, even though the resistance can be measured between test terminals 155 and 165 on opposite sides of the resistive element 115 (Look, col. 5, lines 28-30), the resistance is merely dependent on a contact area between the resistive element 15 and the conductive layer 105. The resistance of the resistive element 115 is not dependent on a distance along the resistive element 115. Moreover, even if the contact area between the resistive element 115 and the conductive layer 105 were to depend on a distance between the test terminals, generally, Look nevertheless does not disclose a resistance dependent on a distance along multiple interconnects. Rather, Look merely includes a single resistive element 115.

For the reasons presented above, Look does not disclose all of the limitations of the claim because Look does not disclose two interconnects and a resistance between the test pads is dependent on a distance along the interconnects between the test pads, as recited in the claim. Accordingly, Applicant respectfully asserts claim 1 is patentable over Look because Look does not disclose all of the limitations of the claim.

Independent Claims 6 and 13

Applicant respectfully asserts independent claims 6 and 13 are patentable over the proposed combinations of cited references at least for similar reasons to those stated above in regard to the rejection of independent claim 1. Each of claims 6 and 13 recites subject matter which is similar to the subject matter of claim 1 discussed above.

Although the language of these claims differs from the language of claim 1, and the scope

of these claims should be interpreted independently of other claims, Applicant respectfully asserts that the remarks provided above in regard to the rejection of claim 1 also apply to the rejection of these claims.

Dependent Claims

Claims 2-5, 7-12, and 14-19 depend from and incorporate all of the limitations of the corresponding independent claims 1, 6, and 13. Applicant respectfully asserts claims 2-5, 7-12, and 14-19 are allowable based on allowable base claims. Additionally, each of claims 2-5, 7-12, and 14-19 may be allowable for further reasons.

CONCLUSION

Applicant respectfully requests reconsideration of the claims in view of the amendments and the remarks made herein. A notice of allowance is earnestly solicited.

This response is accompanied by the appropriate fee to obtain a 1-month extension of the period for responding to the Office Action, thereby moving the deadline for response from June 18, 2009, to July 18, 2009.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-4019** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-4019** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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